SURFACE MOUNT TECHNOLOGY (SMT) CHIP COMPONENTS / BOTTOM-ONLY TERMINATIONS



CHIP COMPONENTS BOTTOM-ONLY TERMINATIONS

The mechanical properties of the solder joints of bottom-only terminations are slightly reduced from those of 1-3-5 chip components, as only the metallized termination pads on the underside of the component are available for mechanical and electrical attachment to the printed wiring board. The bottom only termination presents some difficulty during visual inspection, as very little of the actual termination is exposed or visible.

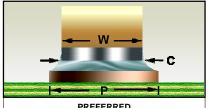
See Section 7.01 "Surface Mount Soldering, General Requirements", for common accept / reject criteria.



PREFERRED

The component is properly centered between the lands and exhibits acceptable solder thickness and tilt. No mechanical or heat damage is evident.

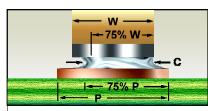
NASA-STD-8739.2 [12.9.1]



PREFERRED END JOINT WIDTH (C)

The width of the end joint is equal to the width of the component (W), and extends to the width of the land (P).

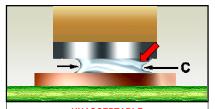
Best Workmanship Practice



ACCEPTABLE END JOINT WIDTH (C)

End joint width shall not be less than 75% of the component termination width (W) or less than 75% of the land width (P).

Best Workmanship Practice



UNACCEPTABLE INSUFFICIENT END JOINT WIDTH (C)

An end joint of insufficient width indicates that there may be solderability problems that may adversely impact the long-term reliability and integrity of the solder termination

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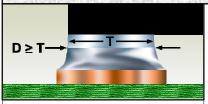


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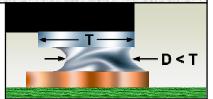
SURFACE MOUNT TECHNOLOGY (SMT) CHIP COMPONENTS / BOTTOM-ONLY TERMINATIONS (cont.)



PREFERRED SIDE JOINT LENGTH (D)

The length of the side joint fillet equals or exceeds the component termination pad length (T)

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ACCEPTABLE SIDE JOINT LENGTH (D)

Any side joint length is acceptable, provided there is evidence of a side joint, and all other joint parameters are met.

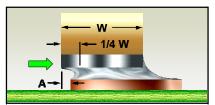
Best Workmanship Practice



PREFERRED SIDE / LATERAL OVERHANG (A)

The component is centered on the pads, with no side / lateral overhang (A).

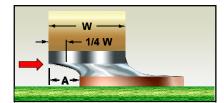
NASA-STD-8739.2 [8.7.4.q.1]



ACCEPTABLE SIDE / LATERAL OVERHANG (A)

Side overhang shall not exceed 25% of the part width (W) and the minimum end joint width (C) requirements shall be met.

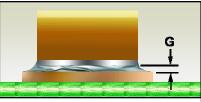
NASA-STD-8739.2 [8.7.4.g.1]



UNACCEPTABLE EXCESS SIDE / LATERAL OVERHANG (A)

Side overhang in excess of 25% of the part width (W) and/or the minimum end joint width (C) may impact the long-term reliability and integrity of the solder termination.

NASA-STD-8739.2 [12.9.1.b.7]



ACCEPTABLE MINIMUM SOLDER THICKNESS (G)

The solder quantity shall be sufficient to form a properly wetted, concave fillet on the vertical surfaces of the chip, and which exhibits good wetting to the chip metallization and termination pad.

NASA-STD-8739.2 [12. 8.1.b], [12.9.1.a]

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SURFACE MOUNT TECHNOLOGY (SMT) CHIP COMPONENTS / BOTTOM-ONLY COMPONENTS (cont.)

UNACCEPTABLE **INSUFFICIENT SOLDER THICKNESS (G)**

The solder quantity is insufficient to form a properly wetted, concave fillet which exhibits good wetting to the chip metallization and termination pad.

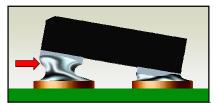
NASA-STD-8739.2 [12.9.1.b.5]



ACCEPTABLE TILT

Part tilt shall be less than or equal to 25 % of the part thickness, and shall not interfere with the proper placement of adjacent parts.

NASA-STD-8739.2 [12.6.2], [12.9.1]



UNACCEPTABLE **EXCESS TILT**

Part tilt in excess of 25% of the part thickness may impact the long-term reliability and integrity of the solder termination, and may interfere with the proper placement and thermal profile of adjacent parts.

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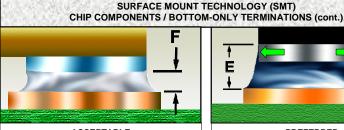
NASA-STD-8739.2 [12.9.1.b.1], [12.9.1.b.2]

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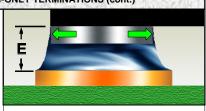
4



ACCEPTABLE MINIMUM FILLET HEIGHT (F)

There shall be evidence of a properly wetted fillet on the exposed sides of the termination.

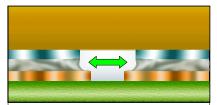
NASA-STD-8739.2 [12.9.1.a]



PREFERRED MAXIMUM FILLET HEIGHT (E)

The fillet shall exhibit a positive wetting angle and shall not contact the component body.

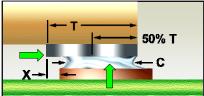
NASA-STD-8739.2 [12.8.1], [12.8.2.b.12], [12.9.1.a]



PREFERRED INSIDE OVERHANG

The target condition is the component centered between the termination pads, without the inside edges of the metallization pads overhanging the edges of the termination pads.

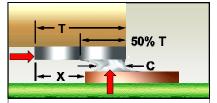
NASA-STD-8739.2 [8.7.4.g.2]



ACCEPTABLE INSIDE OVERHANG (X)

Inside overhang (X) shall be less than or equal to 50% of the end termination width (T) and the minimum end joint width (C) requirements shall be met.

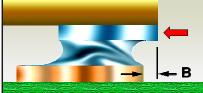
NASA-STD-8739.2 [8.7.4.g.2]



UNACCEPTABLE EXCESS INSIDE OVERHANG (X)

Inside overhang shall not exceed 50% of the end termination width (t) and the minimum end joint width (C) requirements shall be met.

NASA-STD-8739.2 [12.6.2.a.2]



UNACCEPTABLE **END OVERHANG (B)**

Overhang of the chip's metallization (pad) beyond the outside edge of the termination pad is not

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